

## DAFTAR PUSTAKA

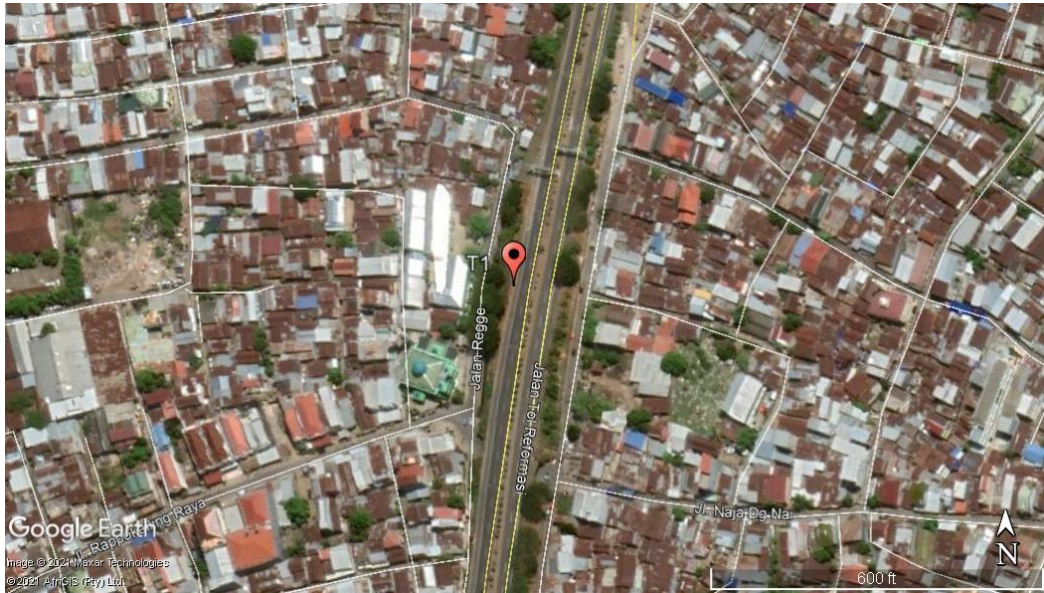
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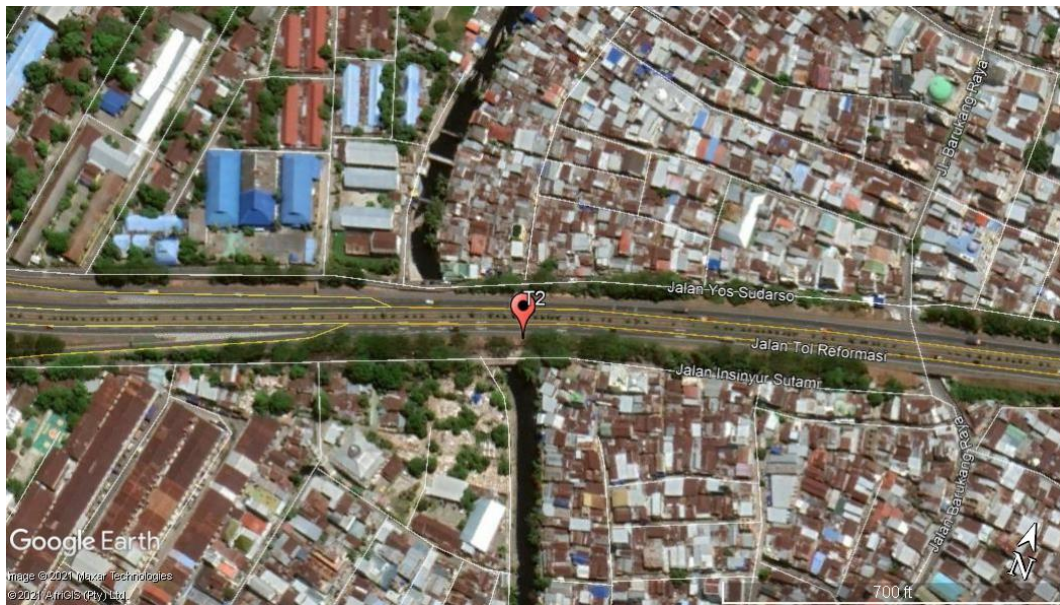
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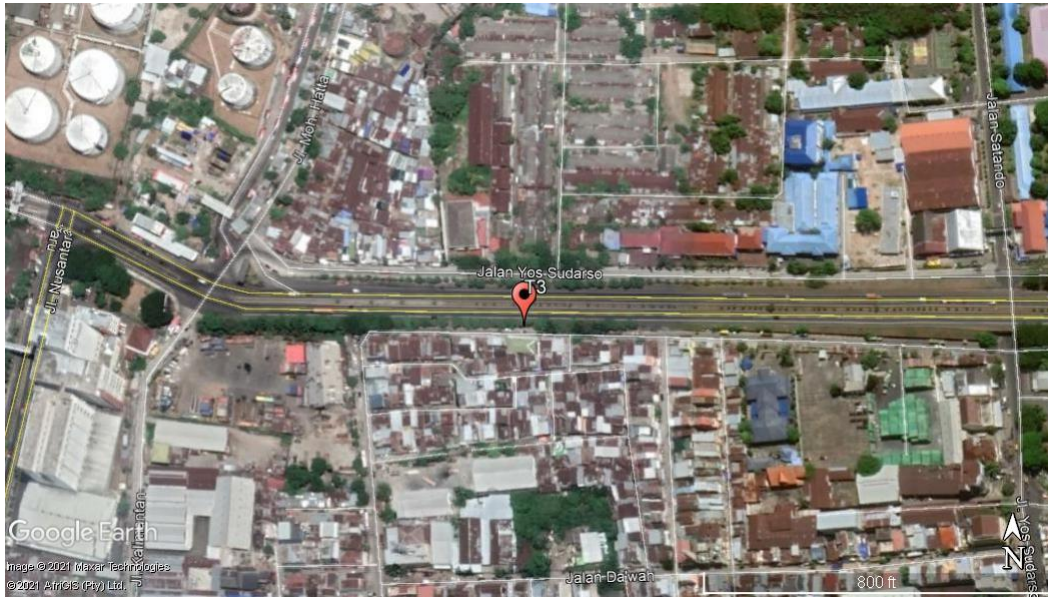
**Lampiran 1**  
**Layout Titik Pengambilan Data**



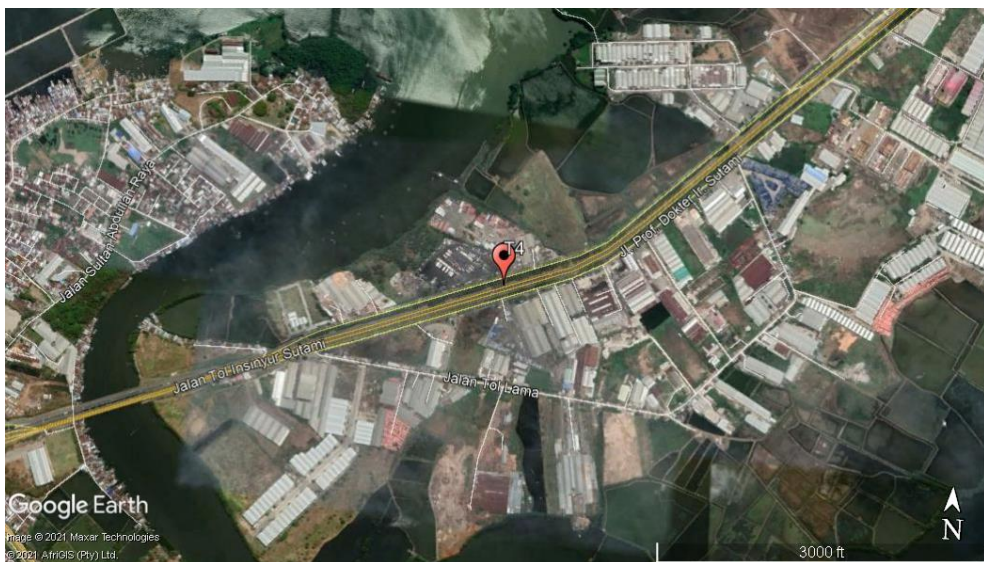
Titik Pengamatan 1 Tol Reformasi Km 4 (600 m)



Titik Pengamatan 2 Tol Reformasi Km 1



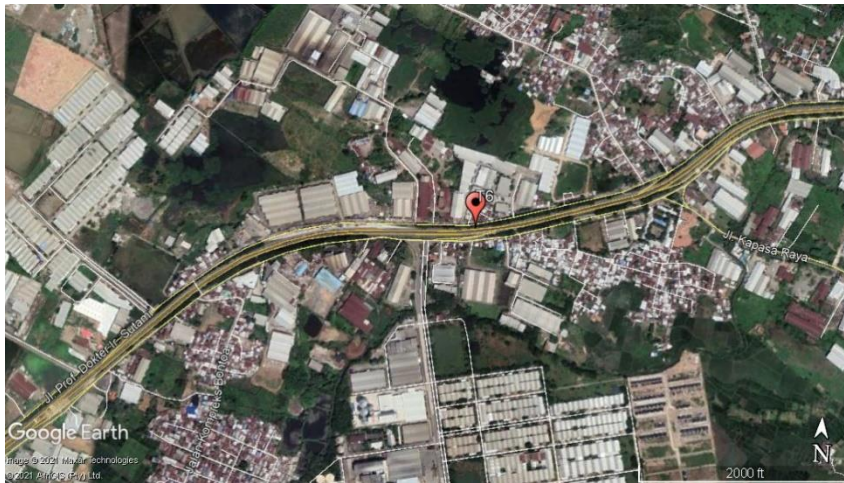
Titik Pengamatan 3 Tol Reformasi Km 0 (400 m)



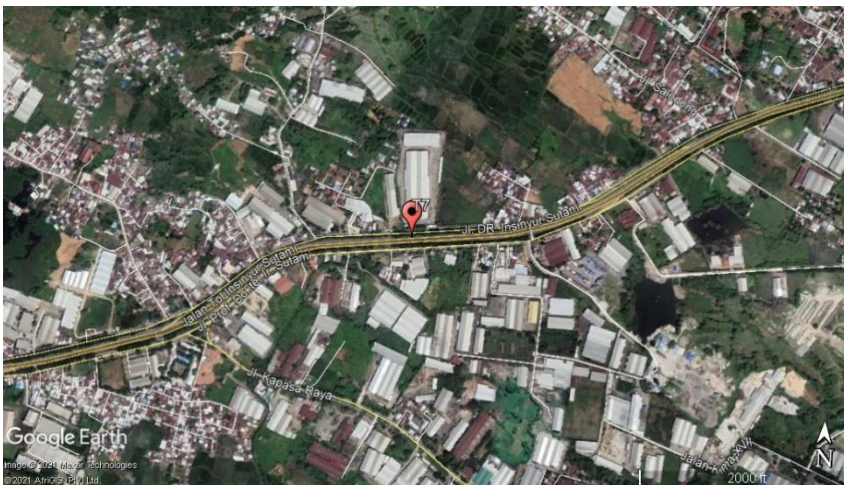
Titik Pengamatan 4 Tol Ir. Sutami Km 1 (600 m)



Titik Pengamatan 5 Tol Ir. Sutami Km 3 (400 m)



Titik Pengamatan 6 Tol Ir. Sutami Km 5



Titik Pengamatan 7 Tol Ir. Sutami Km 6 (400 m)





Titik Pengamatan 8 Tol Ir. Sutami Km 7 (800 m)



Titik Pengamatan 9 Tol Ir. Sutami Km 10

# **Lampiran 2**

## **Data Meteorologi**

**Titik Pengamatan 1 Tol Reformasi Km 4 (600 m)**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	4	27	0	26	80	0	315	756.06	1008	7	5	9100	0
2021	4	27	1	26	82	0	315	756.06	1008	7	6	9100	0
2021	4	27	2	26	83	0	315	756.06	1008	7	5	9100	0
2021	4	27	3	25	84	0	315	756.06	1007	7	6	9100	0
2021	4	27	4	24	85	0	315	756.06	1008	11	6	9100	0
2021	4	27	5	24	85	0	270	756.06	1008	11	7	9100	0
2021	4	27	6	24	84	0	315	756.06	1008	11	7	9100	0
2021	4	27	7	25	84	0	270	756.06	1008	7	6	5900	0.4
2021	4	27	8	26	75	0	270	756.81	1009	7	8	2000	1.6
2021	4	27	9	27	65	0	315	756.81	1009	7	5	2000	4.1
2021	4	27	10	28	63	0	90	756.81	1009	4	0.5	2000	7.2
2021	4	27	11	29	62	0	90	756.81	1009	4	0.5	2000	9.7
2021	4	27	12	29	61	0	90	756.06	1008	4	0.5	2000	9
2021	4	27	13	30	61	0	90	756.06	1008	11	0.5	5900	8.3
2021	4	27	14	29	61	0	90	755.31	1007	11	5	5900	6.3
2021	4	27	15	29	64	0	90	753.81	1005	7	7	5900	2.8
2021	4	27	16	29	68	0	315	753.81	1005	7	6	5900	1.2
2021	4	27	17	28	72	0	315	756.06	1007	11	0.5	5900	0.3
2021	4	27	18	28	75	0	315	756.06	1007	4	0	5900	0
2021	4	27	19	28	76	0	135	756.06	1008	11	1	5900	0
2021	4	27	20	28	77	0	135	756.06	1008	7	3	5900	0
2021	4	27	21	27	78	0	270	756.06	1008	7	2	9100	0
2021	4	27	22	26	82	0	270	756.06	1008	7	1	9100	0
2021	4	27	23	26	85	0	270	756.06	1008	7	1	9100	0

**Titik Pengamatan 2 Tol Reformasi Km 1**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	4	28	0	26	85	0	270	1009	756.81	7	3.8	9100	0
2021	4	28	1	26	86	0	270	1008	756.06	7	3.2	9100	0
2021	4	28	2	26	86	0	270	1008	756.06	7	2.6	9100	0
2021	4	28	3	26	86	0	270	1008	756.06	7	3	9100	0
2021	4	28	4	26	87	0	270	1007	755.31	7	7	9100	0
2021	4	28	5	26	89	0	270	1008	756.06	11	7	9100	0
2021	4	28	6	26	90	0	270	1008	756.06	7	3.5	9100	0
2021	4	28	7	26	90	0	270	1009	756.81	7	3.3	9100	0.3
2021	4	28	8	27	81	0	270	1009	756.81	7	3	9100	1.4
2021	4	28	9	28	74	0	135	1009	756.81	7	4.6	9100	2.9
2021	4	28	10	28	70	0	90	1009	756.81	7	7	5900	5
2021	4	28	11	29	67	0	90	1009	756.81	4	7.8	5900	6.8
2021	4	28	12	29	67	0.1	90	1009	756.81	7	8.5	5900	8.4
2021	4	28	13	30	68	1.2	90	1008	756.06	11	9.1	5900	7.7
2021	4	28	14	30	73	1.3	90	1008	756.06	11	9.8	5900	5.9
2021	4	28	15	29	76	0	90	1007	755.31	14	9.8	5900	4.1
2021	4	28	16	29	77	0	270	1007	755.31	7	9.8	5900	1.7
2021	4	28	17	28	79	0	270	1008	756.06	7	9.5	5900	0.4
2021	4	28	18	28	80	0	45	1008	756.06	14	9.3	5900	0
2021	4	28	19	28	83	0.2	270	1009	756.81	14	9.3	5900	0
2021	4	28	20	28	84	0.2	270	1009	756.81	7	9	7600	0
2021	4	28	21	27	86	0	270	1011	758.31	11	9.2	5900	0
2021	4	28	22	27	87	0	270	1011	758.31	11	9.5	5900	0
2021	4	28	23	27	87	0	270	1011	758.31	11	9.7	7600	0

**Titik Pengamatan 3 Tol Reformasi Km 0 (400 m)**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				°C	%	mm	°	mmHg	mb	km/jam	tenths	m	
2021	4	29	0	26	90	0.5	270	1009	756.81	11	9.7	7600	0
2021	4	29	1	26	90	0.7	270	1009	756.81	11	9.7	9100	0
2021	4	29	2	26	90	2.7	270	1009	756.81	7	9.7	9100	0
2021	4	29	3	25	90	1.2	270	1009	756.81	7	9.7	500	0
2021	4	29	4	25	89	0	270	1009	756.81	7	9.8	500	0
2021	4	29	5	25	89	1.1	270	1009	756.81	7	9.8	5900	0
2021	4	29	6	25	88	0.5	270	1009	756.81	7	9.7	5900	0.3
2021	4	29	7	25	87	0	270	1011	758.31	7	9.6	9100	0.3
2021	4	29	8	26	86	0.3	315	1011	758.31	7	9.6	5900	0.3
2021	4	29	9	27	83	0.1	315	1011	758.31	4	9.6	5900	3.7
2021	4	29	10	28	80	0	0	1011	758.31	4	9.7	5900	6.5
2021	4	29	11	28	77	0	0	1011	758.31	4	9.8	5900	8.7
2021	4	29	12	29	75	0	0	1009	756.81	7	9.8	5900	9.5
2021	4	29	13	29	72	0	0	1009	756.81	11	9.8	5900	8.8
2021	4	29	14	30	70	0.1	0	1008	756.06	11	9.9	5900	6.6
2021	4	29	15	30	71	0	270	1008	756.06	11	9.8	5900	3.7
2021	4	29	16	30	73	0	270	1007	755.31	7	9.6	5900	1.5
2021	4	29	17	29	74	0	270	1007	755.31	7	9.5	9100	0.4
2021	4	29	18	29	78	0	135	1007	755.31	7	9.6	9100	0
2021	4	29	19	28	83	0	180	1008	756.06	11	9.8	9100	0
2021	4	29	20	28	87	0	225	1008	756.06	11	9.8	5900	0
2021	4	29	21	28	88	0	225	1008	756.06	11	9.8	5900	0
2021	4	29	22	27	89	0	225	1009	756.81	7	9.9	5900	0
2021	4	29	23	27	90	0	180	1009	756.81	7	9.9	5900	0

**Titik Pengamatan 4 Tol Ir. Sutami Km 1 (600 m)**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	4	30	0	26	91	0	315	1009	756.81	11	6.9	5900	0
2021	4	30	1	26	92	0	315	1008	756.06	7	4.8	9100	0
2021	4	30	2	26	92	0	270	1008	756.06	7	2.6	9100	0
2021	4	30	3	26	92	0	270	1008	756.06	7	3.7	9100	0
2021	4	30	4	26	93	0	270	1008	756.06	7	4.8	9100	0
2021	4	30	5	26	93	0	270	1008	756.06	7	5.9	9100	0
2021	4	30	6	26	91	0	270	1008	756.06	7	5	9100	0
2021	4	30	7	26	88	0	270	1009	756.81	7	4	9100	0.2
2021	4	30	8	27	86	0	270	1009	756.81	7	3	9100	0.9
2021	4	30	9	28	80	0	315	1009	756.81	4	4.8	9100	3.1
2021	4	30	10	29	75	0	0	1009	756.81	4	6.6	5900	5.3
2021	4	30	11	30	69	0	90	1009	756.81	4	2.3	5900	7.1
2021	4	30	12	30	68	0	90	1008	756.06	11	8.5	9100	9.3
2021	4	30	13	30	66	0	90	1008	756.06	14	8.6	9100	8.6
2021	4	30	14	30	65	0.1	45	1007	755.31	14	8.7	9100	6.5
2021	4	30	15	30	67	0	45	1007	755.31	14	8.6	9100	4.2
2021	4	30	16	30	68	0	270	1007	755.31	7	8.5	9100	1.8
2021	4	30	17	29	70	0	270	1007	755.31	7	8.4	9100	0.4
2021	4	30	18	29	74	0	90	1007	755.31	11	7	9100	0
2021	4	30	19	28	78	0	135	1008	756.06	4	5.6	9100	0
2021	4	30	20	28	82	0	180	1008	756.06	4	4.2	9100	0
2021	4	30	21	28	83	0	225	1008	756.06	4	5.6	9100	0
2021	4	30	22	28	83	0	270	1008	756.06	7	7.1	9100	0
2021	4	30	23	27	84	0	270	1008	756.06	7	8.6	9100	0

**Titik Pengamatan 5 Tol Ir. Sutami Km 3 (400 m)**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	4	30	0	26	86	0	225	1008	756.06	7	7.3	9100	0
2021	4	30	1	26	87	0	270	1008	756.06	7	7.7	9100	0
2021	4	30	2	26	89	0	315	1008	756.06	7	7.4	9100	0
2021	4	30	3	25	91	0	315	1008	756.06	7	6.2	9100	0
2021	4	30	4	25	91	0	315	1008	756.06	7	4.9	9100	0
2021	4	30	5	25	92	0	270	1008	756.06	7	3.6	9100	0
2021	4	30	6	25	92	0	270	1008	756.06	7	5.3	9100	0
2021	4	30	7	26	91	0	270	1008	756.06	4	6.9	9100	0.3
2021	4	30	8	27	86	0	315	1009	756.81	4	8.6	9100	1.6
2021	4	30	9	27	83	0	45	1009	756.81	7	8.6	9100	4.1
2021	4	30	10	28	78	0	90	1009	756.81	4	8.6	9100	7
2021	4	30	11	29	74	0	90	1008	756.06	7	8.6	9100	9.5
2021	4	30	12	30	71	0	90	1008	756.06	7	8.6	9100	10.2
2021	4	30	13	30	70	0	90	1007	755.31	7	8.6	9100	9.4
2021	4	30	14	30	70	0.1	90	1005	753.81	11	8.6	9100	7.1
2021	4	30	15	30	70	0.2	90	1005	753.81	11	6.4	9100	4.4
2021	4	30	16	30	71	0	315	1005	753.81	7	4.1	9100	1.8
2021	4	30	17	29	73	0	315	1007	755.31	7	1.9	9100	0.4
2021	4	30	18	29	76	0	90	1007	755.31	11	1.5	9100	0
2021	4	30	19	28	81	0	315	1007	755.31	14	1.2	9100	0
2021	4	30	20	28	84	0	180	1008	756.06	14	8	9100	0
2021	4	30	21	28	84	0	270	1008	756.06	14	2.7	9100	0
2021	4	30	22	27	83	0	315	1009	756.81	11	4.6	9100	0
2021	4	30	23	27	83	0	0	1009	756.81	11	6.5	9100	0

**Titik Pengamatan 6 Tol Ir. Sutami Km 5**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	5	2	0	27	87	0	270	1009	756.81	7	4.7	9100	0
2021	5	2	1	27	88	0	315	1008	756.06	7	2.9	9100	0
2021	5	2	2	26	89	0	315	1008	756.06	7	1.1	9100	0
2021	5	2	3	26	91	0	270	1008	756.06	7	1.6	9100	0
2021	5	2	4	26	91	0	270	1008	756.06	7	2.1	9100	0
2021	5	2	5	25	92	0	270	1008	756.06	4	2.6	9100	0
2021	5	2	6	25	92	0	270	1009	756.81	4	4.1	9100	0
2021	5	2	7	26	91	0	270	1009	756.81	7	5.7	9100	0.3
2021	5	2	8	27	89	0	315	1011	758.31	7	7.2	9100	1.6
2021	5	2	9	28	77	0	45	1011	758.31	4	7.5	9100	4.1
2021	5	2	10	29	70	0	90	1009	756.81	4	7.8	9100	7.1
2021	5	2	11	30	66	0	90	1009	756.81	7	8.1	9100	9.5
2021	5	2	12	30	64	0.1	90	1008	756.06	11	6.7	9100	10.4
2021	5	2	13	30	62	1.2	90	1008	756.06	11	5.3	9100	9.6
2021	5	2	14	29	58	1.3	90	1007	755.31	11	3.9	9100	7.3
2021	5	2	15	29	76	1.5	90	1005	753.81	7	4.4	9100	4.1
2021	5	2	16	28	77	0.1	315	1005	753.81	7	4.9	9100	1.7
2021	5	2	17	28	79	0	315	1007	755.31	7	5.4	9100	0.4
2021	5	2	18	28	80	0	315	1007	755.31	4	6.6	9100	0
2021	5	2	19	29	83	0	90	1008	756.06	7	7.7	9100	0
2021	5	2	20	29	74	0	270	1009	756.81	11	8.9	9100	0
2021	5	2	21	28	76	0	270	1009	756.81	11	9.1	9100	0
2021	5	2	22	27	80	0	270	1009	756.81	11	9.4	9100	0
2021	5	2	23	27	82	0	270	1009	756.81	11	9.7	9100	0



**Titik Pengamatan 7 Tol Ir. Sutami Km 6 (400 m)**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	5	3	0	27	84	0	270	1009	756.81	11	9.8	9100	0
2021	5	3	1	27	84	0	270	1008	756.06	7	9.9	9100	0
2021	5	3	2	27	85	0	270	1008	756.06	7	9.9	9100	0
2021	5	3	3	26	85	0	315	1008	756.06	7	9.7	5900	0
2021	5	3	4	26	86	0	315	1008	756.06	7	9.5	5900	0
2021	5	3	5	26	87	0	315	1008	756.06	7	9.2	5900	0
2021	5	3	6	26	87	0	315	1008	756.06	7	8.4	5900	0
2021	5	3	7	26	87	0	315	1009	756.81	7	7.5	5900	0.3
2021	5	3	8	27	83	0	0	1009	756.81	7	6.7	9100	1.3
2021	5	3	9	28	75	0	90	1011	758.31	7	7.7	9100	3.8
2021	5	3	10	29	71	0	90	1011	758.31	7	8.8	5900	6.5
2021	5	3	11	30	67	0	90	1009	756.81	7	9.8	5900	8.8
2021	5	3	12	30	65	0	90	1009	756.81	11	9.8	5900	9.3
2021	5	3	13	30	66	0	135	1008	756.06	11	9.9	5900	8.6
2021	5	3	14	30	68	0.1	90	1008	756.06	11	9.9	5900	6.5
2021	5	3	15	30	71	0	90	1007	755.31	7	9.9	5900	3.8
2021	5	3	16	30	72	0	225	1007	755.31	7	9.8	5900	1.6
2021	5	3	17	30	74	0	225	1007	755.31	7	9.8	5900	0.4
2021	5	3	18	29	77	0.3	225	1008	756.06	4	9.8	9100	0
2021	5	3	19	29	80	0	225	1008	756.06	7	9.8	9100	0
2021	5	3	20	28	82	0	270	1008	756.06	11	9.9	9100	0
2021	5	3	21	28	84	0	270	1008	756.06	14	9.9	9100	0
2021	5	3	22	27	86	0	270	1009	756.81	11	9.9	9100	0
2021	5	3	23	27	88	0.3	315	1009	756.81	11	9.9	9100	0

**Titik Pengamatan 8 Tol Ir. Sutami Km 7 (800 m)**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	5	4	0	27	84	0	315	1009	756.81	7	9.5	5900	0
2021	5	4	1	27	84	0	315	1008	756.06	7	9.1	7600	0
2021	5	4	2	26	86	0	315	1008	756.06	11	8.7	7600	0
2021	5	4	3	26	87	0	315	1007	755.31	7	8.7	7600	0
2021	5	4	4	26	87	0	270	1007	755.31	7	8.7	7600	0
2021	5	4	5	26	88	0	270	1007	755.31	7	8.7	5900	0
2021	5	4	6	26	88	0	270	1008	756.06	7	8.9	5900	0
2021	5	4	7	26	87	0	315	1008	756.06	7	9.1	9100	0.2
2021	5	4	8	27	82	0	315	1009	756.81	7	9.3	9100	1.1
2021	5	4	9	28	76	0	0	1009	756.81	7	9	9100	2.8
2021	5	4	10	28	70	0	0	1008	756.06	4	8.8	9100	4.9
2021	5	4	11	29	70	0	45	1008	756.06	4	8.5	9100	6.6
2021	5	4	12	30	64	0	45	1008	756.06	4	8.6	9100	10.4
2021	5	4	13	30	63	0	45	1007	755.31	11	8.7	9100	9.6
2021	5	4	14	31	63	0.3	45	1007	755.31	14	8.8	9100	7.3
2021	5	4	15	30	64	0	0	1007	755.31	14	8.3	9100	4.2
2021	5	4	16	30	66	0	315	1007	755.31	11	7.8	9100	1.8
2021	5	4	17	30	68	0	315	1007	755.31	7	7.3	9100	0.4
2021	5	4	18	29	72	0	315	1007	755.31	7	5.8	9100	0
2021	5	4	19	29	77	0	315	1008	756.06	11	4.3	9100	0
2021	5	4	20	28	81	0	315	1008	756.06	11	2.8	9100	0
2021	5	4	21	28	83	0	315	1008	756.06	14	4.2	9100	0
2021	5	4	22	27	84	0	315	1009	756.81	11	5.5	9100	0
2021	5	4	23	27	86	0.4	315	1009	756.81	11	6.9	7600	0

**Titik Pengamatan 9 Tol Ir. Sutami Km 10**

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan		Kecepatan Angin	Tutupan Awan	CH	Radiasi
				C	%	mm		mmHg	mb	km/jam	tenths	m	
2021	5	5	0	27	81	0	315	1009	756.81	11	5.8	5900	0
2021	5	5	1	26	82	0	315	1008	756.06	11	5.8	7600	0
2021	5	5	2	26	83	0	315	1008	756.06	11	5.8	7600	0
2021	5	5	3	25	84	0	315	1008	756.06	11	5.8	7600	0
2021	5	5	4	25	84	0	315	1008	756.06	11	5.8	7600	0
2021	5	5	5	25	85	0	315	1008	756.06	11	5.8	5900	0
2021	5	5	6	25	83	0	315	1008	756.06	11	5.8	5900	0
2021	5	5	7	26	80	0	315	1009	756.81	11	5.8	9100	0.4
2021	5	5	8	27	78	0	315	1009	756.81	11	5.8	9100	1.6
2021	5	5	9	28	73	0	0	1009	756.81	11	5.8	9100	4.1
2021	5	5	10	29	68	0	0	1009	756.81	14	5.8	9100	7
2021	5	5	11	30	63	0.1	0	1009	756.81	14	5.8	9100	9.5
2021	5	5	12	30	63	0	0	1008	756.06	14	7.1	9100	10.1
2021	5	5	13	30	64	0	0	1008	756.06	18	7.1	9100	9.3
2021	5	5	14	30	64	0	0	1007	755.31	18	7.1	9100	7
2021	5	5	15	30	64	0	0	1007	755.31	18	7.1	9100	4.3
2021	5	5	16	29	65	0	0	1007	755.31	14	9.7	9100	1.8
2021	5	5	17	29	65	0	0	1007	755.31	14	9.7	9100	0.4
2021	5	5	18	28	69	0	0	1007	755.31	14	9.7	9100	0
2021	5	5	19	28	74	0	0	1008	756.06	11	9.7	9100	0
2021	5	5	20	28	78	0	0	1008	756.06	11	9.2	9100	0
2021	5	5	21	27	81	0	0	1008	756.06	11	9.2	9100	0
2021	5	5	22	26	83	0	315	1009	756.81	11	9.2	9100	0
2021	5	5	23	26	86	0	315	1009	756.81	7	9.2	7600	0

**Lampiran 3**  
**Pengolahan WRPLOT *View***

1. Data Angin dilah dalam Format Microsoft Excel 97 Workbook 2003 dengan contoh format sebagai berikut

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Precipitasi	Arus Angin	Tekanan	Arah Angin	Turupan Angin	CU	Radiasi	
				°C	%	mm	m/s	mb	km/jam	tertentu	m		
2021	4	27	0	26	80	0	315	756.06	1008	7	5	9100	0
2021	4	27	1	26	82	0	315	756.06	1008	7	6	9100	0
2021	4	27	2	26	83	0	315	756.06	1008	7	5	9100	0
2021	4	27	3	25	84	0	315	756.06	1007	7	6	9100	0
2021	4	27	4	24	85	0	315	756.06	1008	11	6	9100	0
2021	4	27	5	24	85	0	270	756.06	1008	11	7	9100	0
2021	4	27	6	24	84	0	315	756.06	1008	11	7	9100	0
2021	4	27	7	25	84	0	270	756.06	1008	7	6	5900	0.4
2021	4	27	8	26	75	0	270	756.81	1009	7	8	2000	1.6
2021	4	27	9	27	65	0	315	756.81	1009	7	5	2000	4.1
2021	4	27	10	28	63	0	90	756.81	1009	4	0.5	2000	7.2
2021	4	27	11	29	62	0	90	756.81	1005	4	0.5	2000	5.7
2021	4	27	12	29	61	0	90	756.06	1008	4	0.5	2000	9
2021	4	27	13	30	61	0	90	756.06	1008	11	0.5	5900	8.3
2021	4	27	14	29	61	0	90	753.81	1007	11	5	5900	4.3
2021	4	27	15	29	64	0	90	753.81	1005	7	7	5900	2.8
2021	4	27	16	34	68	0	90	753.81	1005	2	6	5900	1.2
2021	4	27	17	35	72	0	45	756.06	1007	2	0.5	5900	0.3
2021	4	27	18	38	76	0	135	756.06	1007	4	0	5900	0
2021	4	27	19	28	76	0	135	756.06	1008	11	1	5900	0
2021	4	27	20	28	77	0	135	756.06	1008	7	3	5900	0
2021	4	27	21	27	78	0	270	756.06	1008	7	2	9100	0
2021	4	27	22	26	82	0	270	756.06	1008	7	1	9100	0
2021	4	27	23	26	85	0	270	756.06	1008	7	1	9100	0

## 2. Membuat SAMSON File

- Menginput data angin yang telah diolah diexcel

AERMET View 8.9.0 - [D:\SKRIPS\SKRIPSWEET\QU\PEMODELAN AERMOD\UNTUK T1\TITIK T1.AMF]

File Mode Data Run Tools Help

Hourly Surface Data ASOS

Hourly Surface Data File

Format: SCRAM (M)

File: [ ]

Surface Station Information

Station ID: [ ] State: [ ]

Name: [ ]

Station is ASOS Site

Surface Station Location

Latitude: [ ] N S

Longitude: [ ] W E

Base Elevation (MSL): [ ] m

Met Data Reported Time

Is Surface Data Reported in Local Standard Time (LST)?

Yes (Default)  No

Adjustment to Local Standard Time (LST):

0 hours [ ] Tp [ ] (+ for W) (- for E)

Hourly Surface Data > File Maker...  
 Hourly Surface Data > Import from Excel...  
 Hourly Surface Data > MAKEMET Utility...  
 Hourly Surface Data > Multi-Year Files Utility...  
 Hourly Surface Data > ADMS UK To SAMSON Converter...  
 Hourly Surface Data > Land Use Creator  
 Hourly Surface Data > Editor...

Dates to be Retrieved (YYYYMMDD)

Start Date: [ ]

End Date: [ ]

Search Stations...  
 ASOS Stations...

- Mengatur dan menyesuaikan kolom berdasarkan pengelompokkan tahun, bulan, tanggal, jam, temperatur, kelembaban, presipitasi, arah angin, tekanan, kecepatan angin, tutupan awan, *ceiling height*, dan radiasi

#	Data Field Name	Excel Column Name	Missing Indicator in Excel File	Unit in Excel File	Number Type
1	Year	A		N/A	YY, YYYY
2	Month	B		N/A	1 to 12
3	Day	C		N/A	1 to 31
4	Hour	D		00 to 23	00 to 23, 01 to 24

First Row to Import: 1 Set Last Row to Import: 28 Set Import

Excel File	SAMSON File
1	Tahun
2	Bulan
3	Hari
4	Jam
5	Temperatur
6	Kelembaban
7	Presipitasi
8	Arah Angin
9	Tekanan
10	kecepatan Angin
11	Tutupan Awan
12	CH
13	Radiasi

- Mengisi data stasiun BMKG pada menu Station Information setelah itu memilih Import untuk menyimpan file dalam format SAMSON

Station ID: 97180 City: HASANUDDIN State: ID

Latitude: 05° 04' 00" N Longitude: 119° 32' 00" E Time Zone: UTC+8 (Beijing)

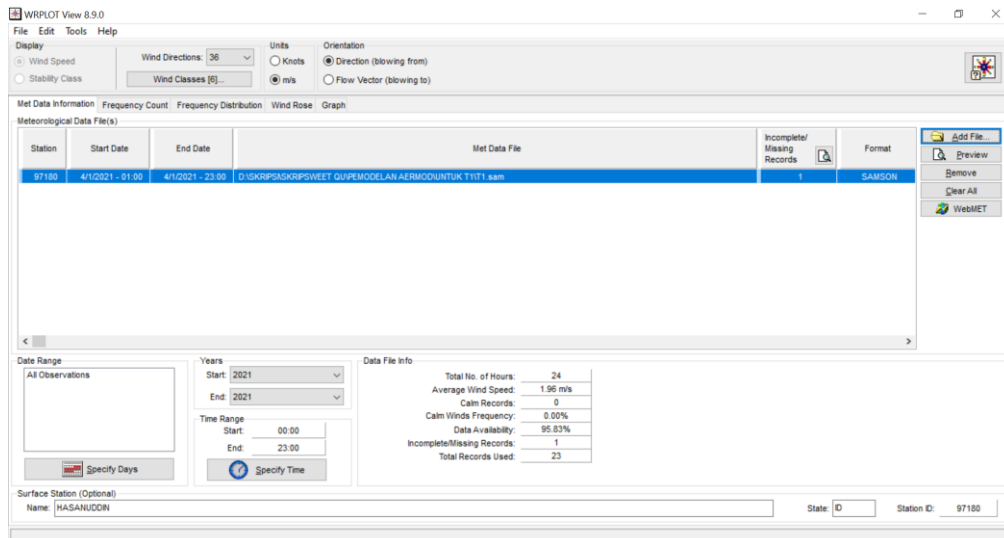
Station Elevation (MSL) [m]: 14 (Optional) Search Stations...

First Row to Import: 1 Set Last Row to Import: 27 Set Import

Excel File	SAMSON File
1	Tahun
2	Bulan
3	Hari
4	Jam
5	Temperatur
6	Kelembaban
7	Presipitasi
8	Arah Angin
9	Tekanan
10	kecepatan Angin
11	Tutupan Awan
12	CH
13	Radiasi

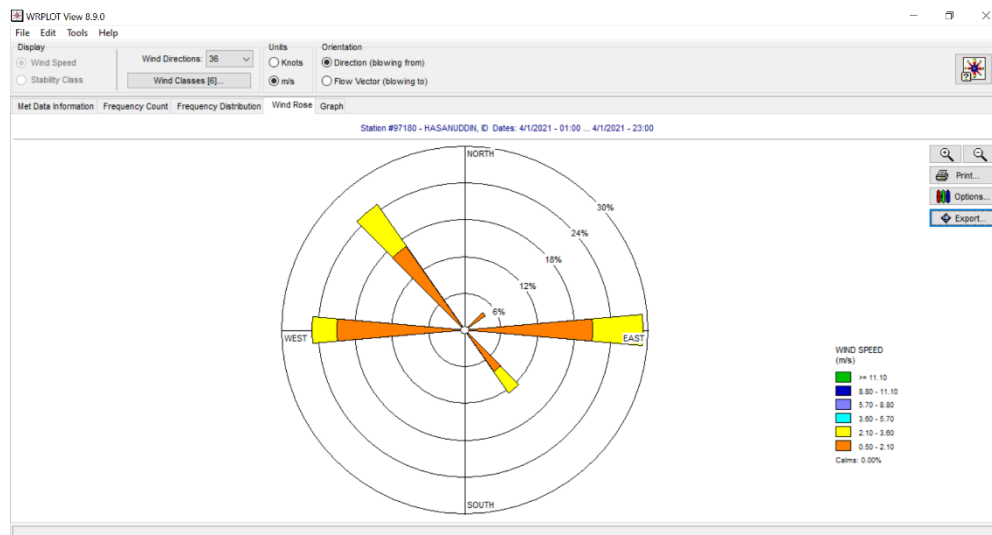
### 3. Membuat *Windrose*

Memasukkan file SAMSON yang telah dibuat dengan cara memilih menu *Add File* kemudian pilih *Tab Wind Rose*



### 4. Mengatur *Windrose*

- Mengatur arah sesuai yang diinginkan pada menu Wind Direction. Selanjutnya pada menu Units mengubah satuan menjadi m/s dan pada menu Orientation memilih Flow Vector (*blowing to*)



**Lampiran 4**  
**Pengolahan AERMET *View***



1. Data meteorologi diolah dalam format Microsoft Excel 97-Workbook 2003 dengan contoh format sebagai berikut

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Precipitasi	Arah Angin	Tekanan	kecepatan Angin	Tutupan Awan	CH	Radiasi	
2021	4	27	0	26	80	0	315	756.06	1008	5	9100	0	
2021	4	27	1	26	82	0	315	756.06	1008	7	6	9100	0
2021	4	27	2	26	83	0	315	756.06	1007	7	5	9100	0
2021	4	27	3	25	84	0	315	756.06	1007	7	6	9100	0
2021	4	27	4	24	85	0	315	756.06	1008	11	6	9100	0
2021	4	27	5	24	85	0	270	756.06	1008	11	7	9100	0
2021	4	27	6	24	84	0	315	756.06	1008	11	7	9100	0
2021	4	27	7	25	84	0	270	756.06	1008	7	6	5900	0.4
2021	4	27	8	26	75	0	270	756.81	1009	7	8	2000	1.6
2021	4	27	9	27	65	0	315	756.81	1009	7	5	2000	4.1
2021	4	27	10	28	63	0	90	756.81	1009	4	0.5	2000	7.2
2021	4	27	11	29	62	0	90	756.81	1009	4	0.5	2000	9.7
2021	4	27	12	29	61	0	90	756.06	1008	4	0.5	2000	9
2021	4	27	13	30	61	0	90	756.06	1008	11	0.5	5900	8.3
2021	4	27	14	29	61	0	90	755.31	1007	11	5	5900	6.3
2021	4	27	15	29	64	0	90	753.81	1005	7	7	5900	2.8
2021	4	27	16	34	68	0	90	753.81	1005	2	6	5900	1.2
2021	4	27	17	35	72	0	45	756.06	1007	2	0.5	5900	0.3
2021	4	27	18	28	75	0	135	756.06	1007	4	0	5900	0
2021	4	27	19	28	76	0	135	756.06	1008	11	1	5900	0
2021	4	27	20	28	77	0	135	756.06	1008	7	3	5900	0
2021	4	27	21	27	78	0	270	756.06	1008	7	2	9100	0
2021	4	27	22	26	82	0	270	756.06	1008	7	1	9100	0
2021	4	27	23	26	85	0	270	756.06	1008	7	1	9100	0

2. Penginputan file Excel pada AERMET View untuk membuat Data Samson

Import Surface Data from Excel

Import Surface Data From (Excel File): D:\SKRIPSISKRPSWEET\QUIPEMODELAN AERMOD\UNTUK T11T1.xlsx

Save Surface File As (SAMSON Format): D:\SKRIPSISKRPSWEET\QUIPEMODELAN AERMOD\UNTUK T11T1.sam

#	Data Field Name	Excel Column Name	Missing Indicator in Excel File	Unit in Excel File	Number Type
1	Year	A		N/A	YY, YYYY
2	Month	B		N/A	1 to 12
3	Day	C		N/A	1 to 31
4	Hour	D		00 to 23	00 to 23, 01 to 24

First Row to Import: 1 | Set | Last Row to Import: 28 | Set | Import

Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Precipitasi	Arah Angin	Tekanan	kecepatan Angin	Tutupan Awan	CH	Radiasi	
2021	4	27	0	26	80	0	315	756	1008	5	9100	0	
2021	4	27	1	26	82	0	315	756	1008	7	6	9100	0
2021	4	27	2	26	83	0	315	756	1007	7	5	9100	0
2021	4	27	3	25	84	0	315	756	1007	7	6	9100	0
2021	4	27	4	24	85	0	315	756	1008	11	6	9100	0
2021	4	27	5	24	85	0	270	756	1008	11	7	9100	0
2021	4	27	6	24	84	0	315	756	1008	11	7	9100	0
2021	4	27	7	25	84	0	270	756	1008	7	6	5900	0.4
2021	4	27	8	26	75	0	270	756.81	1009	7	8	2000	1.6
2021	4	27	9	27	65	0	315	756.81	1009	7	5	2000	4.1
2021	4	27	10	28	63	0	90	756.81	1009	4	0.5	2000	7.2
2021	4	27	11	29	62	0	90	756.81	1009	4	0.5	2000	9.7
2021	4	27	12	29	61	0	90	756	1008	4	0.5	2000	9
2021	4	27	13	30	61	0	90	756	1008	11	0.5	5900	8.3
2021	4	27	14	29	61	0	90	755.31	1007	11	5	5900	6.3

Help | Close

### 3. Penginputan data stasiun kedalam AERMET dapat dilihat di bawah ini

Station ID: 97180    City: HASANUDDIN    State: ID

Latitude: 05° 04' 00"    Longitude: 119° 32' 00"    Time Zone: UTC+8 (Beijing)

Station Elevation (MSL) [m]: 14 (Optional)

First Row to Import: 1    Last Row to Import: 27

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Tahun	Bulan	Hari	Jam	Temperatur	Kelembapan	Presipitasi	Arah Angin	Tekanan	kecepatan Angin	Tutupan Awan	CH	Radiasi					
2	2021	4	27	0	26	80	0	315	1008	7	5	89	0					
3	2021	4	27	1	26	82	0	315	1008	7	6	89	0					
4	2021	4	27	2	26	83	0	315	1008	7	5	89	0					
5	2021	4	27	3	25	84	0	315	1007	7	6	89	0					
6	2021	4	27	4	24	85	0	315	1008	11	6	89	0					
7	2021	4	27	5	24	85	0	270	1008	11	7	89	0					
8	2021	4	27	6	24	84	0	315	1008	11	7	98	0					
9	2021	4	27	7	25	84	0	270	1008	7	6	98	0.4					
10	2021	4	27	8	26	75	0	270	1009	7	8	98	1.6					
11	2021	4	27	9	27	65	0	315	1009	7	5	98	4.1					
12	2021	4	27	10	28	63	0	90	1009	4	0.5	98	7.2					
13	2021	4	27	11	29	62	0	90	1009	4	0.5	98	9.7					
14	2021	4	27	12	29	61	0	90	1008	4	0.5	98	9					
15	2021	4	27	13	30	61	0	90	1008	11	0.5	98	8.3					
16	2021	4	27	14	29	61	0	90	1007	11	5	98	6.3					
17	2021	4	27	15	29	64	0	90	1005	7	7	98	2.8					

### 4. Penginputan file . SAM

Hourly Surface Data File

Format: SAMSON    Year: 2021    WebMET    Multi-Year

File: T1.sam

Surface Station Information

Station ID: 97180    State: ID    Search Stations...

Name: HASANUDDIN    ASOS Stations...

Station is ASOS Site:

Surface Station Location

Latitude: 5.078333    Longitude: 119.549444    Base Elevation (MSL): 14 [m]

Met Data Reported Time

Is Surface Data Reported in Local Standard Time (LST)?

Yes (Default)     No

Adjustment to Local Standard Time (LST):

0 hours    Tip: (+ for W, - for E)

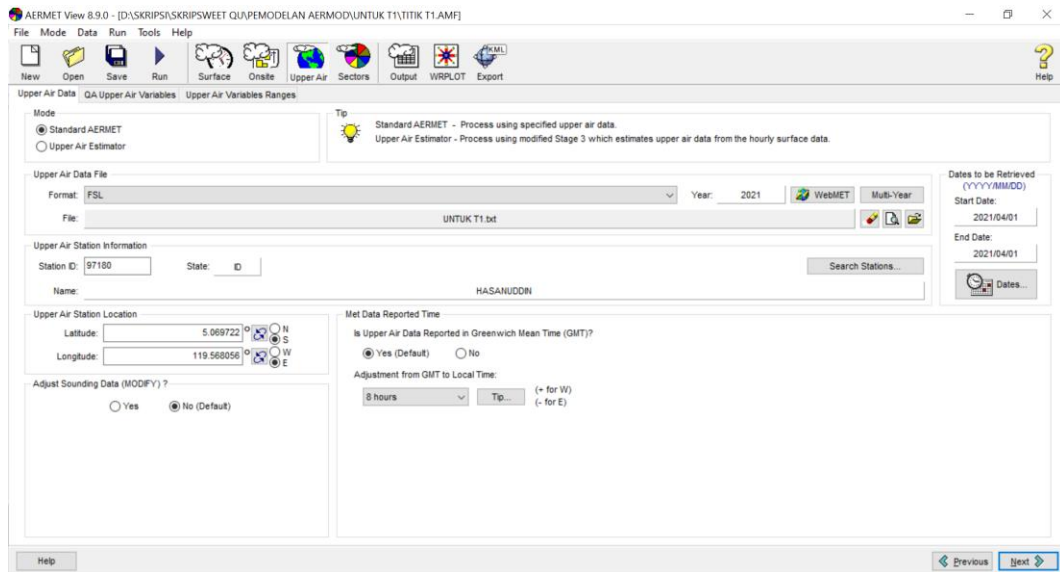
Dates to be Retrieved (YYYYMMDD)

Start Date: 2021/04/01

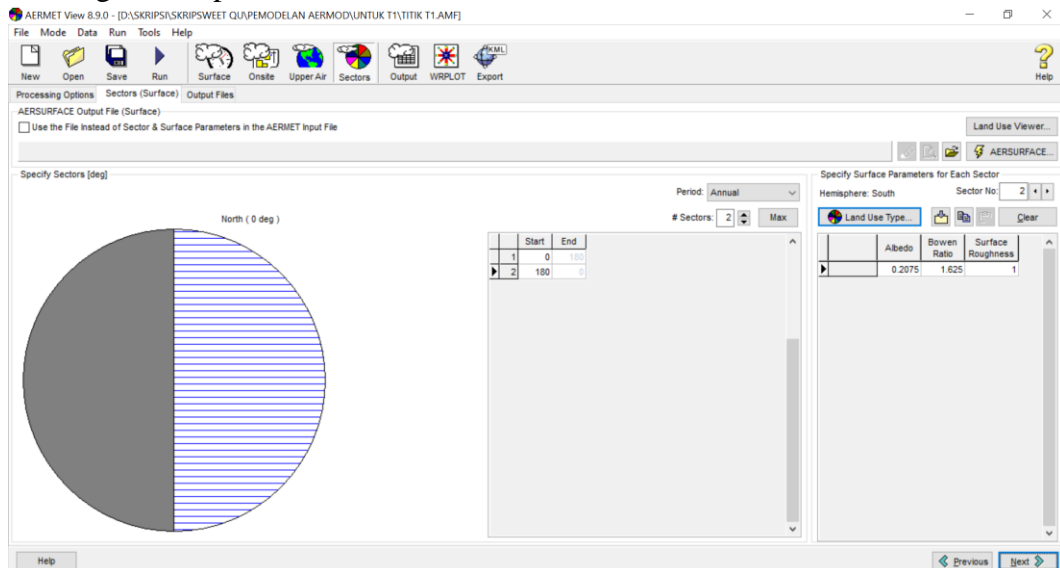
End Date: 2021/04/01

Dates...

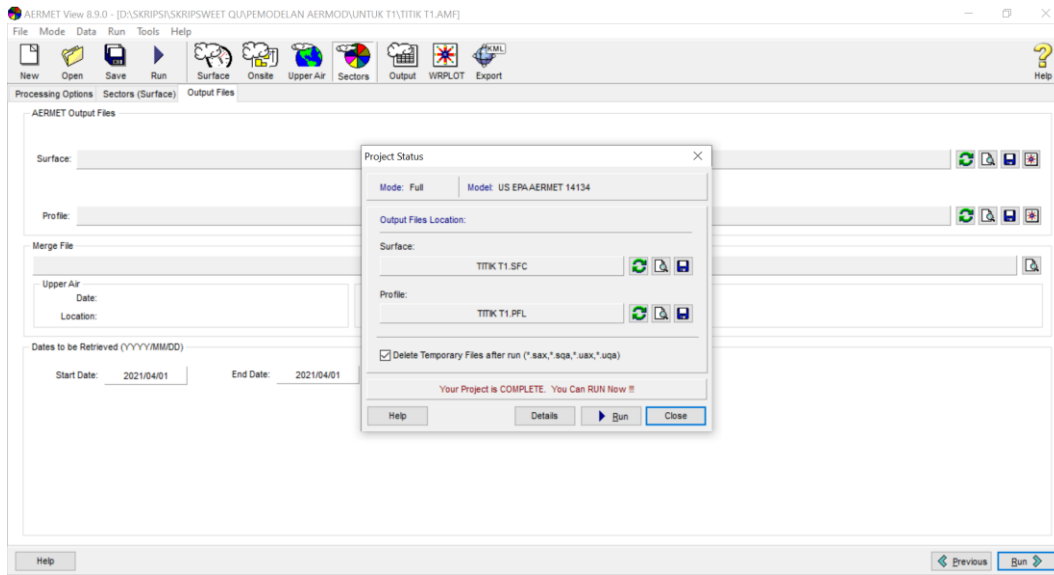
## 5. Penginputan data *Upper Air* menggunakan file format .FSL.



## 6. Pembagian dan pemilihan sektor

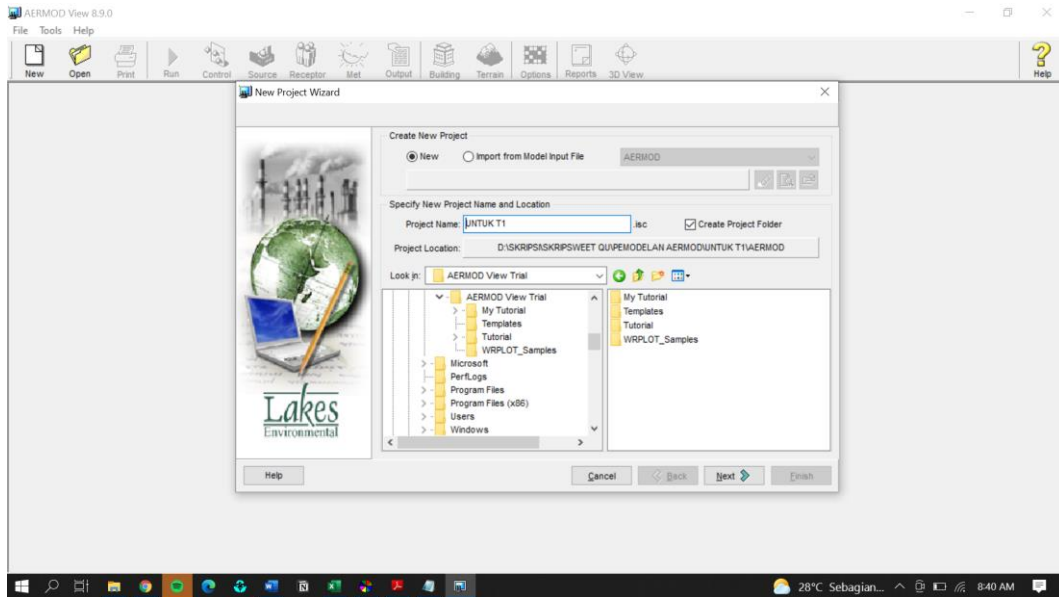


## 7. Running AERMET

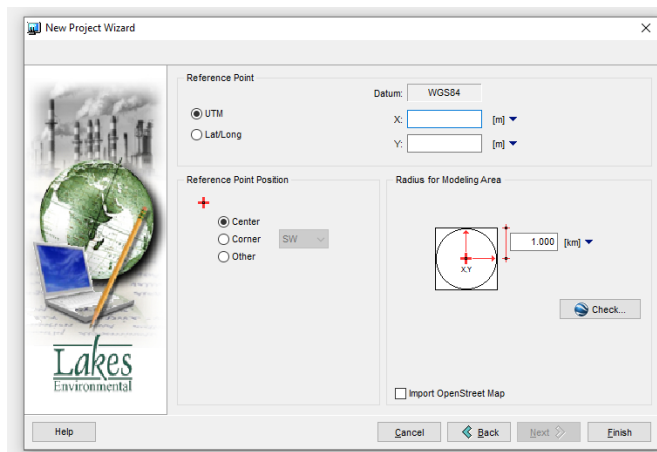
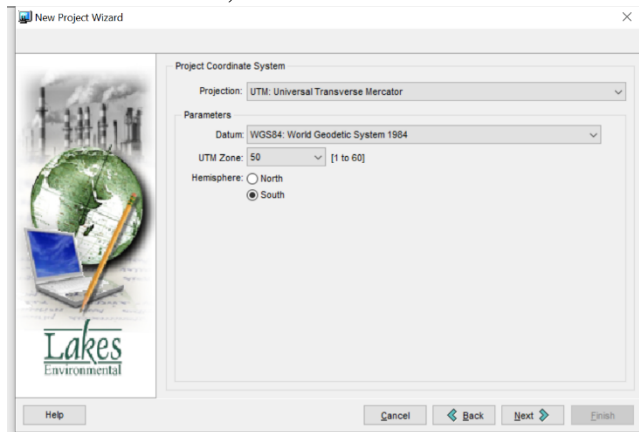


**Lampiran 5**  
**Pengolahan AERMOD *View***

# 1. Memulai AERMOD

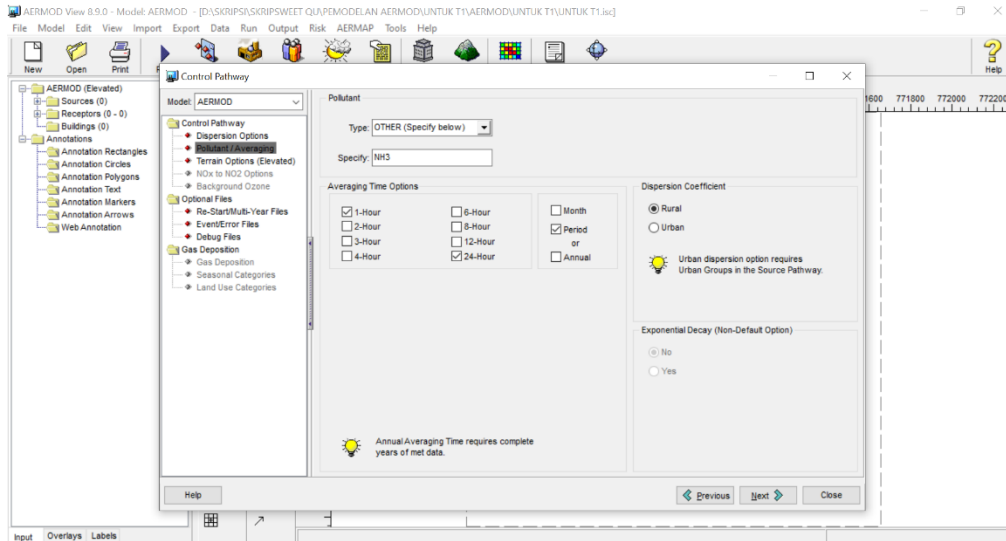


# 2. Menentukan sistem koordinat, datum dan titik acuan

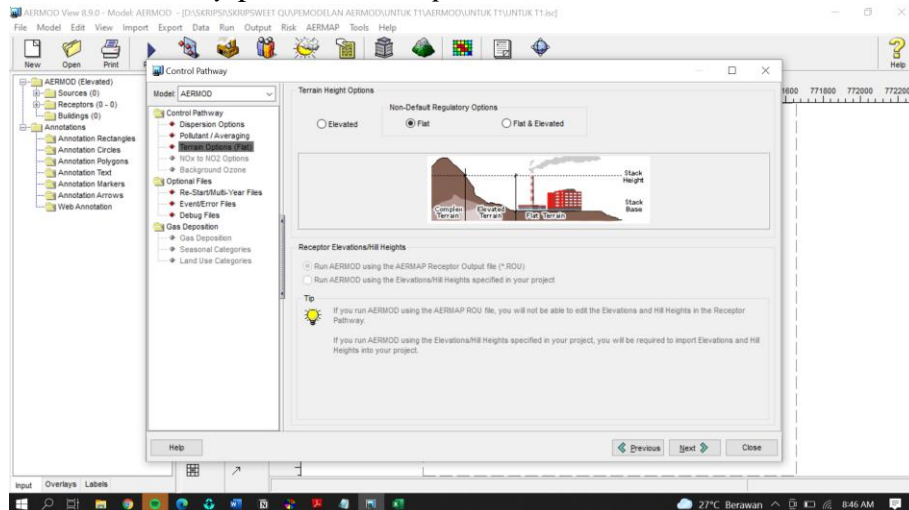


### 3. Menentukan *Control Pathway*

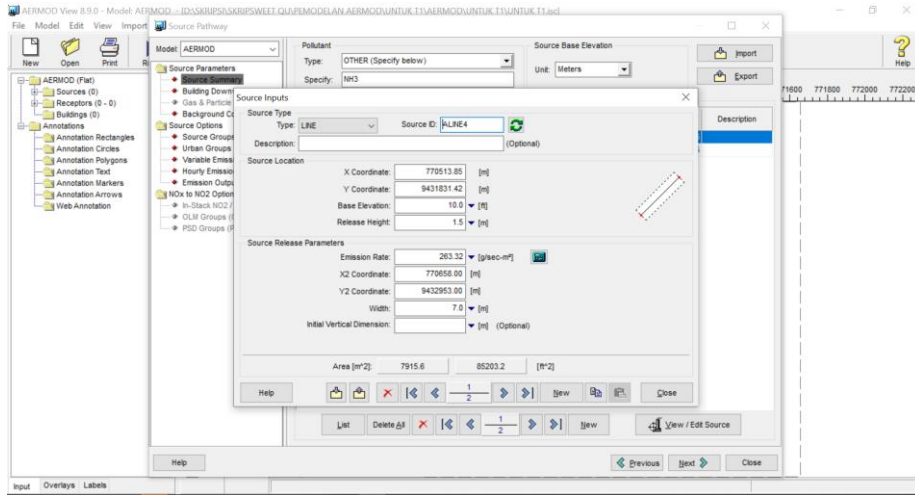
- *Control Pathway* pada *Pollutant/Averaging*



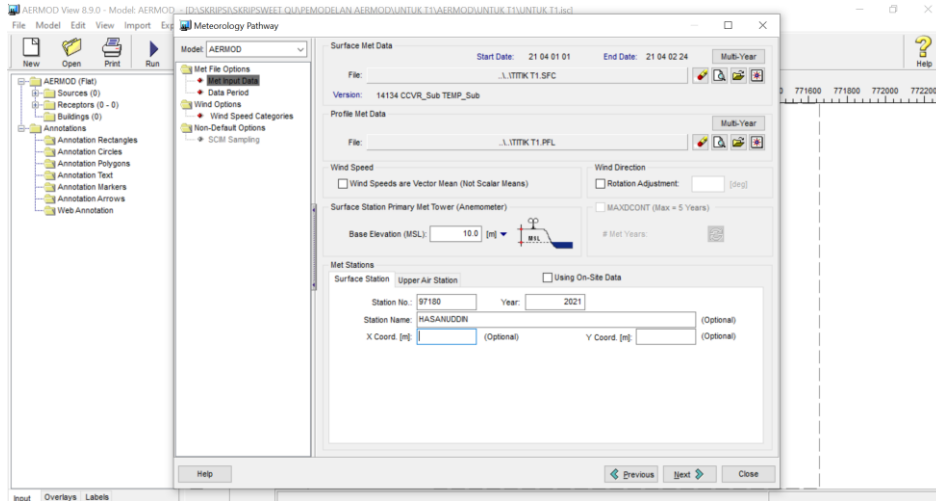
- *Control Pathway* pada *Terrain Option*



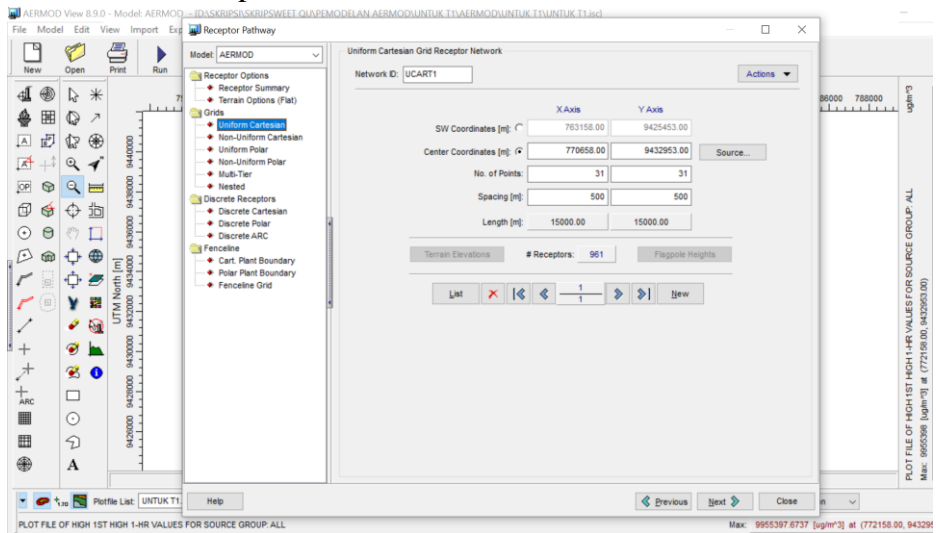
#### 4. Memasukkan Data Sumber Emisi



#### 5. Memasukkan Data Meteorologi

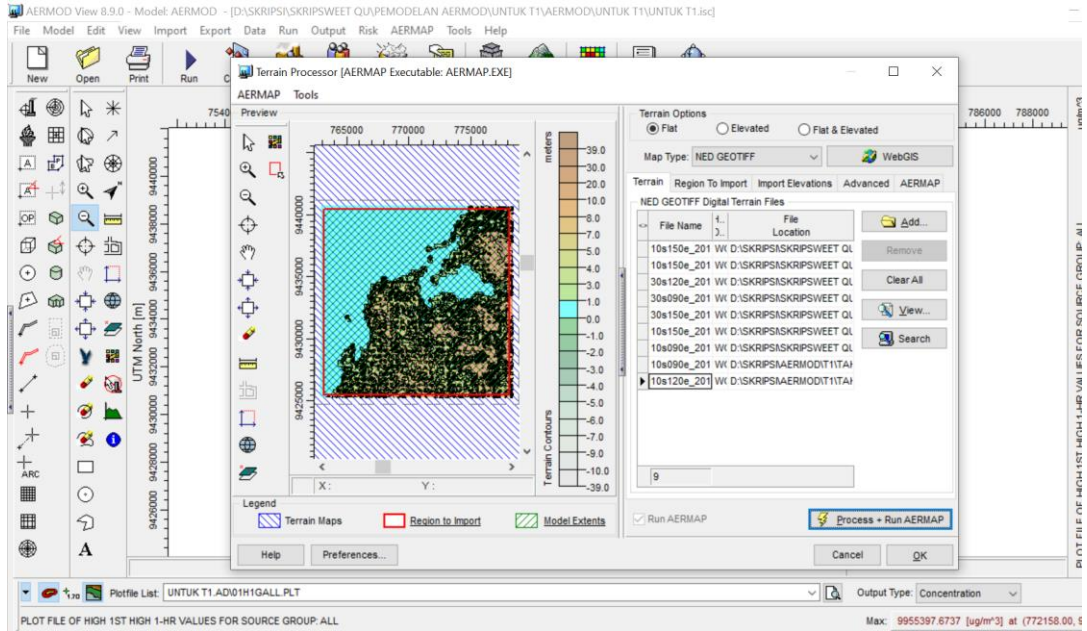


#### 6. Menentukan Reseptor

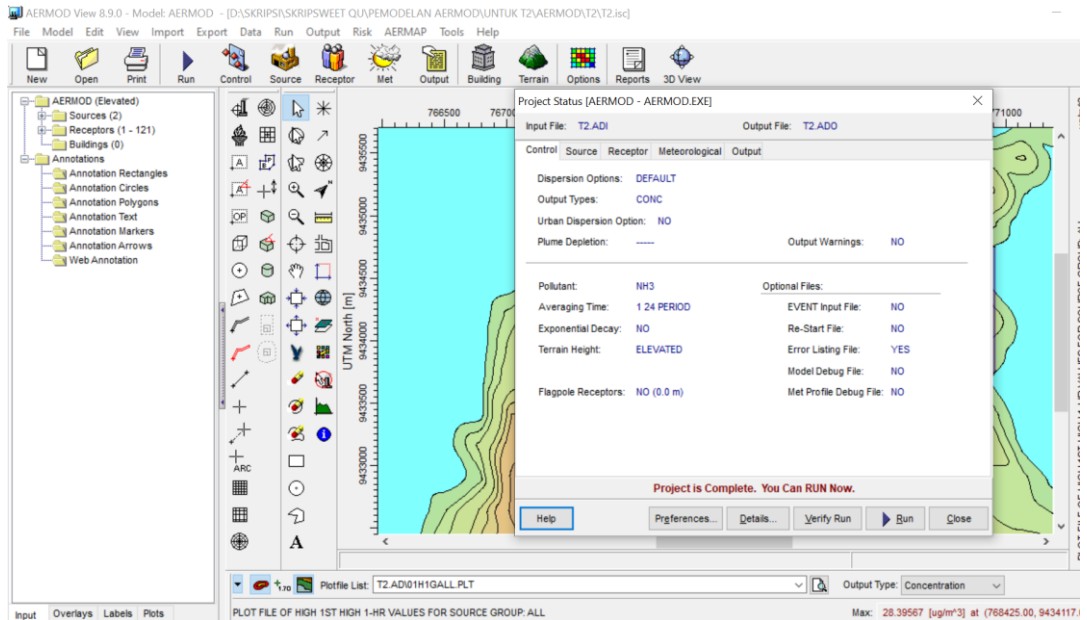




## 7. Pengoperasian Terrain Processor pada AERMAP



## 8. Running AERMOD

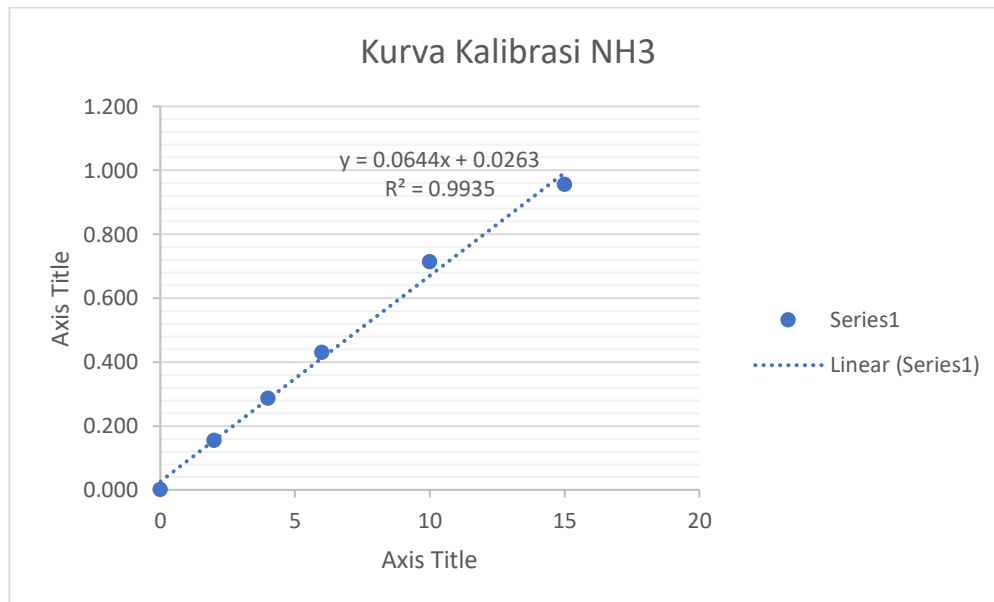


**Lampiran 6**  
**Tabel Perhitungan Konsentrasi**  
**NH<sub>3</sub> Udara Ambien**

<b>Konsentrasi NH3 di Impinger</b>										
<b>Hari / Lokasi</b>	<b>Laju Alir</b>		<b>Suhu</b>			<b>P</b>	<b>t</b>	<b>V</b>	<b>a</b>	<b>C</b>
	<b>L1</b>	<b>L2</b>	<b>°C</b>	<b>°K</b>	<b>T</b>					
Hari Ke-1 Km 4(600)	1.8	1.8	34.643	307.643	0.969	0.993315789	60	103.9155457	1.5839	<b>15.24219</b>
Hari Ke-2 Km 1	1.8	1.6	39.486	312.486	0.954	0.994815789	60	96.76737001	0.61335	<b>6.338397</b>
Hari Ke-3 Km 0(400)	1.8	1.8	34.729	307.729	0.968	0.994815789	60	104.0434797	1.18015	<b>11.34285</b>
Hari Ke-4 1(600)	1.8	1.8	32.729	305.729	0.975	0.993328947	60	104.5675865	0.89285	<b>8.538497</b>
Hari ke-5 Km 3(400)	1.8	1.8	30.271	303.271	0.983	0.994815789	60	105.5725939	1.0559	<b>10.00165</b>
Hari ke-6 Km 5	1.8	1.8	27.843	300.843	0.991	0.993328947	60	106.2657733	0.63665	<b>5.991111</b>
Hari ke-7 Km 6(400)	1.8	1.8	32.971	305.971	0.974	0.994815789	60	104.640984	1.7857	<b>17.06502</b>
Hari ke-8 Km 7(800)	1.8	1.8	29.100	302.100	0.986	0.994815789	60	105.9819641	0.78415	<b>7.3989</b>
Hari ke-9 Km 10	1.8	1.8	29.957	302.957	0.984	0.994815789	60	105.6821142	1.1413	<b>10.79937</b>

**Lampiran 7**  
**Kurva Kalibrasi**

Kurva Kalibrasi			
Kode	Volume Larutan STD	Konsentrasi	Adsorbansi
Std1	0	0	0.000
Std2	0.2	2	0.155
Std3	0.4	4	0.286
Std4	0.6	6	0.430
Std5	1	10	0.713
Std6	1.5	15	0.956



**Lampiran 8**  
**Tabel Perhitungan Emisi Kendaraan**  
**Bermotor**

TS	Jumlah Kendaraan (Unit)						Total	L (km)	Besaran Emisi NH <sub>3</sub> (gr/jam)						Total
	PC-CC	PC-SUV	LCV-P	LCV-D	HDV-D	BUS			PC-CC	PC-SUV	LCV-P	LCV-D	HDV-D	BUS	
TS 1	215	650	42	64	47	0	1018	2.48	55.613	168.132	9.479	0.190	0.338	0.000	0.0649
TS 2	57	763	90	138	303	1	1352	1.97	11.712	156.774	16.134	0.326	1.731	0.006	0.0519
TS 3	79	883	97	55	242	0	1356	1.02	8.404	93.939	9.004	0.067	0.716	0.000	0.0311
TS 4	375	670	60	32	81	0	1218	3.160	123.596	220.824	17.254	0.121	0.742	0.000	0.1007
TS 5	242	695	56	49	52	0	1094	3.450	87.080	250.085	17.581	0.203	0.520	0.000	0.0987
TS 6	485	1532	82	124	197	1	2421	2.890	146.192	461.786	21.565	0.430	1.651	0.008	0.1755
TS 7	220	1576	76	101	131	0	2104	2.710	62.184	445.461	18.742	0.328	1.030	0.000	0.1466
TS 8	264	714	44	30	99	0	1151	3.640	100.228	271.072	14.575	0.131	1.045	0.000	0.1075
TS 9	204	697	61	42	43	0	1047	3.180	67.661	231.177	17.652	0.160	0.397	0.000	0.0881

**Lampiran 9**  
**Dokumentasi Kegiatan**



## 1. Pembuatan Larutan Penjerap dan Larutan Uji



## 2. Hasil Kurva Kalibrasi



### 3. Pengambilan Sampel



### 4. Pengujian Sampel dengan Spektrofotometer

